

DEPARTMENT of ENVIRONMENTAL SERVICES  
Water Division - Watershed Management Bureau

LAKE TROPHIC DATA

MORPHOMETRIC:

Lake: ISLAND POND	Lake Area (ha): 201.49
Town: DERRY	Maximum depth (m): 24.3
County: Rockingham	Mean depth (m): 5.4
River Basin: Merrimack	Volume (m <sup>3</sup> ): 11558000
Latitude: 42°51'56" N	Relative depth: 1.5
Longitude: 71°12'43" W	Shore configuration: 2.81
Elevation (ft): 205	Areal water load (m/yr): 9.81
Shore length (m): 14600	Flushing rate (yr <sup>-1</sup> ): 1.80
Watershed area (ha): 4403.0	P retention coeff.: 0.55
% watershed ponded: 2.4	Lake type: natural w/dam

BIOLOGICAL:

	12 March 2003	6 September 2002
DOM. PHYTOPLANKTON (% TOTAL) #1	SYNURA 90%	TABELLARIA 30%
#2	ASTERIONELLA 4%	CERATIUM 15%
#3		FRAGILARIA 12%
PHYTOPLANKTON ABUNDANCE (units/mL)		
CHLOROPHYLL-A (µg/L)		3.30
DOM. ZOOPLANKTON (% TOTAL) #1	NAUPLIUS LARVA 51%	KERATELLA 46%
#2	KERATELLA 9%	
#3		
ROTIFERS/LITER	12	76
MICROCRUSTACEA/LITER	38	37
ZOOPLANKTON ABUNDANCE (#/L)	53	129
VASCULAR PLANT ABUNDANCE		Abundant
SECCHI DISK TRANSPARENCY (m)		5.0
BOTTOM DISSOLVED OXYGEN (mg/L)	4.7	0.8
BACTERIA (E. coli, #/100 ml) #1		3
#2		
#3		

SUMMER THERMAL STRATIFICATION:

stratified

Depth of thermocline (m): 6.8  
Hypolimnion volume (m<sup>3</sup>): 2241500  
Anoxic volume (m<sup>3</sup>): 3097000

**CHEMICAL:**

Lake: ISLAND POND  
Town: DERRY

	12 March 2003		6 September 2002		
DEPTH (m)	7.0	14.0	3.0	12.0	18.0
pH (units)	6.4	6.3	6.8	6.3	6.3
A.N.C. (Alkalinity)	12.3	12.2	12.3	11.5	13.2
NITRATE NITROGEN	0.16	0.19	< 0.05		0.22
TOTAL KJELDAHL NITROGEN	0.40	0.40	0.30	0.10	0.20
TOTAL PHOSPHORUS	0.006	0.006	0.007	0.008	0.013
CONDUCTIVITY ( $\mu$ mhos/cm)	211.0	216.0	202.0	189.0	189.4
APPARENT COLOR (cpu)	19	19	19	19	33
MAGNESIUM			1.87		
CALCIUM			9.4		
SODIUM			23.1		
POTASSIUM			2.15		
CHLORIDE	46	47	46		41
SULFATE	9	9	8		7
TN : TP	93	98	43		32
CALCITE SATURATION INDEX			2.4		

All results in mg/L unless indicated otherwise

**TROPHIC CLASSIFICATION: 2002**

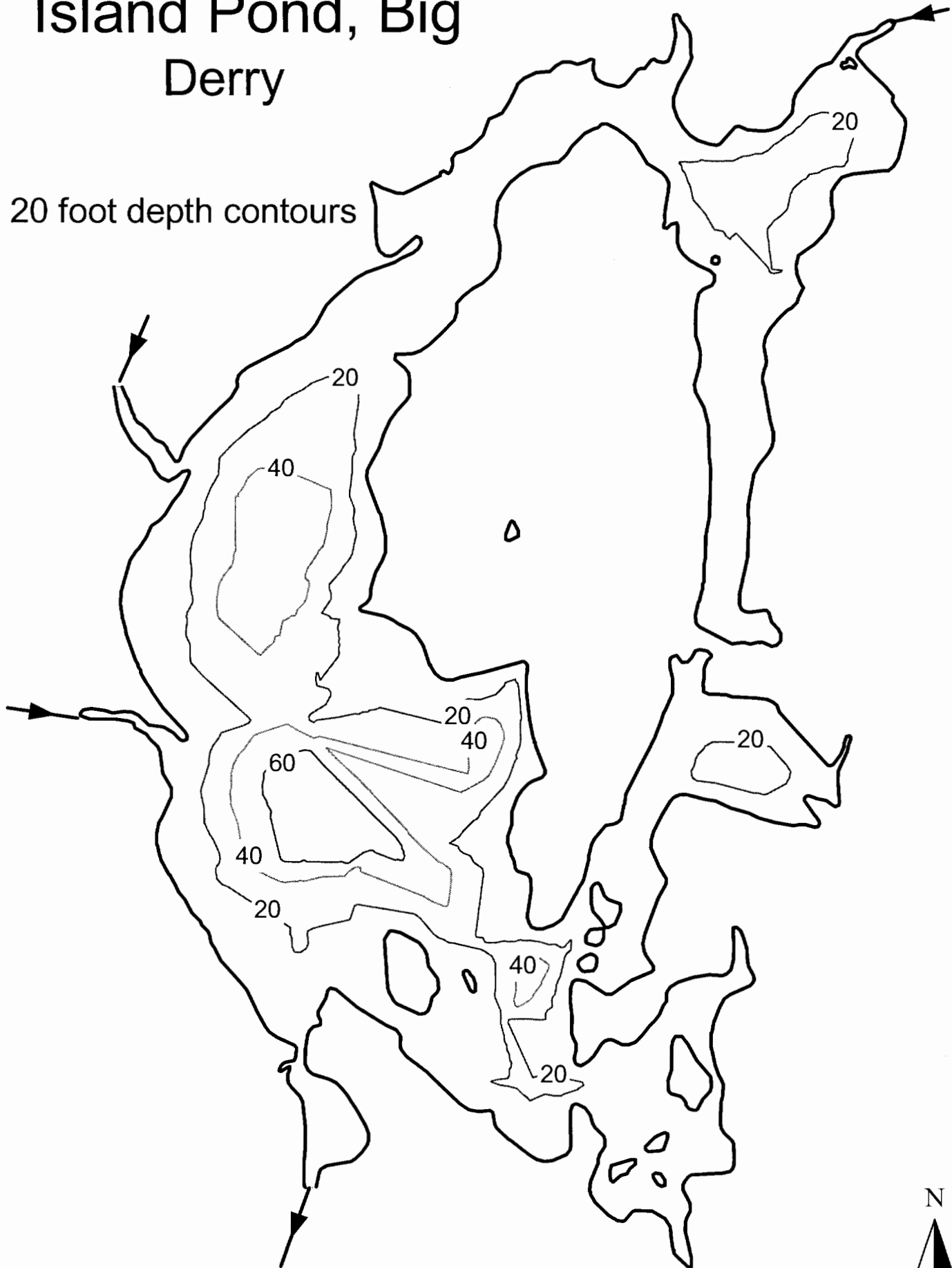
D.O.	S.D.	PLANT	CHL	TOTAL	CLASS
6	2	5	0	13	Eutro.

**COMMENTS:**

1. aka Big Island Pond.
2. No public boat access; need key from the association to use the launch.
3. Previously surveyed in 1976 and 1985 and a participant in VLAP since 1990.
4. Clear water, low nutrient pond with low planktonic productivity; however, it was rated eutrophic because of a bottom dissolved oxygen (DO) depletion and the presence of abundant rooted plant growth, including the exotic rooted plants fanwort (*Cabomba*) and milfoil (*M. heterophyllum*). The pond's trophic classification went from oligotrophic in 1976 to mesotrophic in 1985 to eutrophic in 2002, primarily because of decreased bottom DO and increased rooted plant abundance.
5. The trophic parameters chlorophyll, Secchi transparency and phosphorus have not changed significantly since 1990, as collected by VLAP.
6. Elevated sodium, chloride, conductivity and other cation values suggest road salt and other urban runoff.
7. Densely developed pond with many boats.

# Island Pond, Big Derry

20 foot depth contours



0 0.2 0.4 Kilometers



III-112

# FIELD DATA SHEET

LAKE: ISLAND POND  
DATE: 09/06/2002

TOWN: DERRY  
WEATHER: Sunny, warm & very windy

	DEPTH (M)	TEMP (°C)	*DISSOLVED OXYGEN	OXYGEN SATURATION
	0.1	21.8	7.5	86 %
	1.0	21.8	7.5	85 %
	2.0	21.7	7.5	85 %
	3.0	21.7	7.4	84 %
	4.0	21.6	7.4	84 %
	5.0	21.6	7.4	84 %
	6.0	21.5	7.3	83 %
	7.0	14.9	0.7	7 %
	8.0	13.7	0.5	5 %
	9.0	11.8	0.9	8 %
	10.0	10.2	1.4	12 %
	11.0	9.6	1.7	15 %
	12.0	9.2	1.7	15 %
	13.0	8.9	1.5	13 %
	14.0	8.7	1.3	11 %
	15.0	8.5	1.1	9 %
	16.0	8.4	0.9	8 %
	17.0	8.4	0.9	7 %
	18.0	8.3	0.8	7 %
	19.0	8.3	0.6	6 %
	20.0	8.2	0.7	6 %
	21.0	8.1	0.7	6 %
	22.0	8.1	0.7	6 %
	23.0	8.1	0.8	7 %

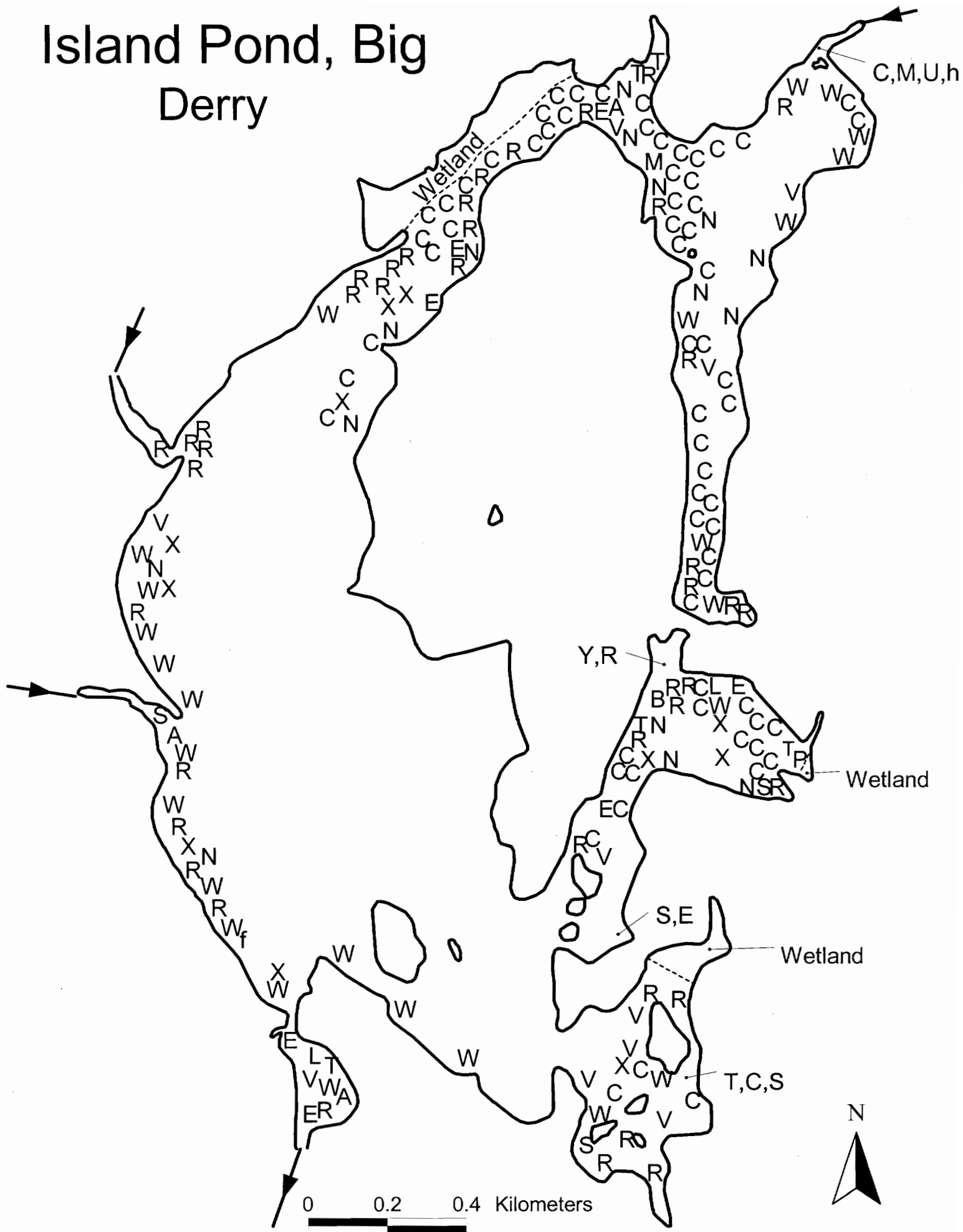
SECCHI DISK (m): 5.0  
BOTTOM DEPTH (m): 24.2  
TIME: 1245

## COMMENTS:

The D.O. profile displayed an unusual decrease in the metalimnion (7 to 8 meters), then a slight increase at the top of the hypolimnion before decreasing again near the bottom. Zooplankton or organic matter may have accumulated in the metalimnion and exerted an oxygen demand.

\*Dissolved oxygen values are in mg/L

# Island Pond, Big Derry



[illegible]